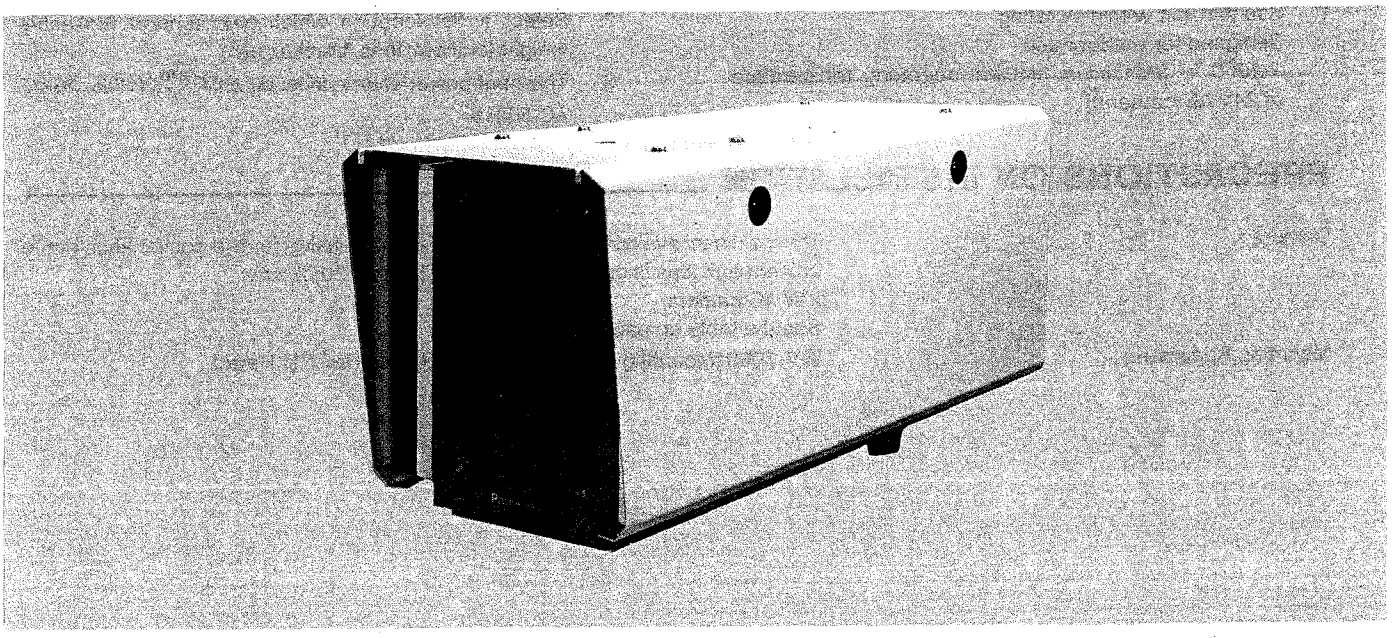
ORDER NO. AVS9007350C8

Service Manual

Outdoor Camera Housing

WV-7160DE



SPECIFICATIONS

Power source :	24V AC 50 Hz supplied from the remote control unit WV-7360
Power consumption :	Max. 102W
Functions :	Fan : 18W (ON at +43°C), Defroster : 15W Heater : 50W (ON at approx. −5°C), Wiper : 20W
Product housed :	24V AC camera (Max. 11W)
Mounting :	From bottom
Mounting bracket :	WV-7060 (optional)
Pan/tilt head :	WV-7260D (optional)
Wiper :	WV-Z50 (optional)
Ambient operating temperature :	−20°C — [Maximum ambient operating temperature of 24V AC camera]
Weight :	Approx. 9.1 kg
Dimensions :	Aprrox. 210(W) x 245(H) x 700(D) mm

STANDARD ACCESSORIES (Supplied)

Cover Locking Key
[Part No. YWV7150EM03] ..... 1 pc.
Camera Mounting Screw
(with insulation rubber) ..... 2 pcs.

Lens Connector [Part No. YWMAS4100] ..... 1 pc.
Power Indicator Masking Label ..... 1 pc.
Power Cable for 24V AC Camera ..... 1 pc.

Panasonic

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

INTRODUCTION

The WV-7160DE is an outdoor camera housing equipped with heater, fan and sunshield as standard, for a 24V AC camera. (See the table on page 2.)
An optional Wiper Unit WV-Z50 can be attached on the sunshield.

This can be mounted from the bottom on the optional Bracket WV-7060 and Pan/Tilt Head WV-7260DE.

PRECAUTIONS

1. Use this unit within its rating.
   Designed for outdoor use.
   $-20°C$ — [(Maximum ambient operating temperature of 24V AC camera)]
2. Select a flat location which can support the entire weight (camera, lens, bracket, etc).
3. The input power source must be $24V^{+10}_{-20}\%$ (19.2 - 26.4V) AC 50 Hz.

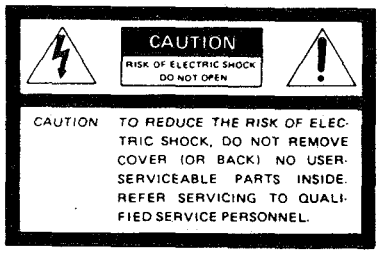
PRECAUTIONS ON INSTALLATION

Camera :

The maximam available capacity inside of the housing for the combination of the camera and lens is approx. 100(H) x 127(W) x 430(D) mm.
24V AC camera
See the table on page 2.

Mounting Apparatus :

WV-7060 (Mounting Bracket) or WV-7260DE (Pan/Tilt Head)


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

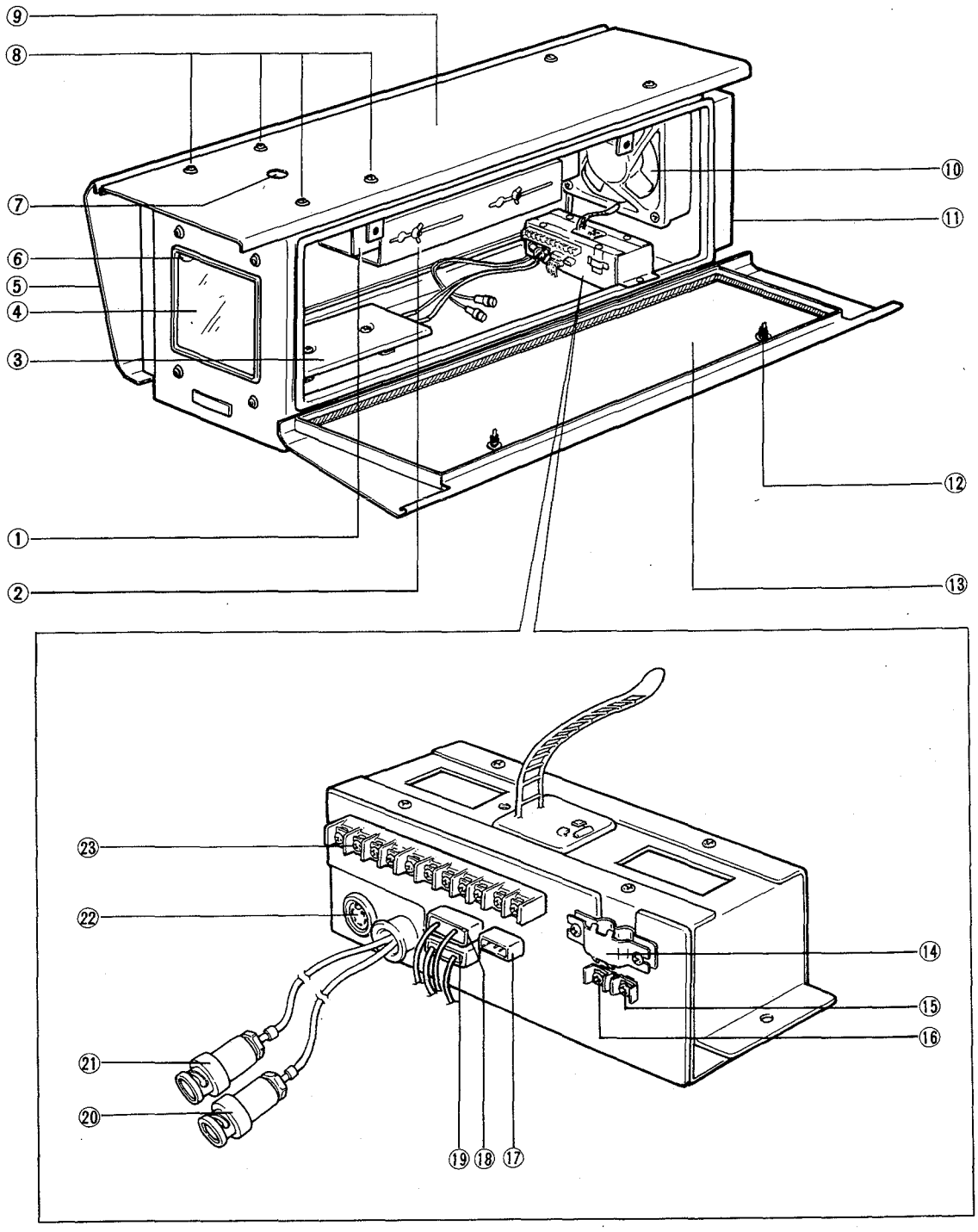
This symbol warns the user that uninsulated voltage within the unit may have suificient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included.
Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the " ⚠ " mark on the schematic diagram and the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards.
Do not modify the original design without permission of manufacturer.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



(1) **Camera Mounting Angle**
See page 8.

(2) **Camera Mounting Plate**
For mounting the 24V AC camera.
See page 8.

(3) **Heater**
Furnished with preset thermistor to keep temperature inside housing warm for the camera.

(4) **Front Glass with Defroster**

(5) **Left-side Cover**

(6) **Thermistat for Defroster**
Protects from overheating of the Front Glass by Defroster.

(7) **Hole for wiring the Wiper Unit**

(8) **Screws for optional Wiper Unit WV-Z50**

(9) **Sunshield**
Protects enclosure from direct solar radiant heat.

(10) **Fan and Filter**
Fan : Furnished with preset thermistat for camera at +43°C. The fan supplies steady forced air through area intake and filter, which flows over camera.

(11) **Intake**

(12) **Lock**
Lock and open with key (provided)
See page 6, 9.

(13) **Right-side cover**
From this side, it is possible to adjust the beam and focus control of the camera.
See page 6.

(14) **Frame Ground**

(15) **External Sync. Input Terminal (EXT SYNC)**

(16) **Video Output Terminal (VIDEO)**

(17) **Camera Power Supply Connector (3-pins) — CN1**
1 : Camera Power
2 : AC Common
3 : Ground

(18) **Sensor Connector (4-pins) — CN2**
Feed the power supply to the sensor circuit board.
1 : Fan and Heater
2 : Fan and Heater
3 : AC Common
4 : AC Common

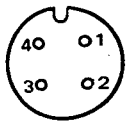
(19) **Lens Connector 1 (5-pins) — CN3**
1 : DC Common
2 : Iris Control
3 : Focus Control
4 : Zoom Control
5 : No Connection

Note :
Each pin of this connector is internally connected to the corresponded pin of the Lens Connector 2 (22).

(20) **Sync. Input Connector(S) (BNC)**
Connect this to Gen-lock Input Connector of the camera.
See page 9.

(21) **Video Output Connector (V) (BNC)**
Connect this to Video Output Connector of the camera.
See Page 9.

(22) **Lens Connector 2**
1 : DC Common
2 : Iris Control
3 : Focus Control
4 : Zoom Control



Note :
Each pin of this connector is internally connected to the corresponded pin of the Lens Connector 1 (19).

(23) **Terminal Strip**

1	2	3	4	5	6	7	8	9	10	11

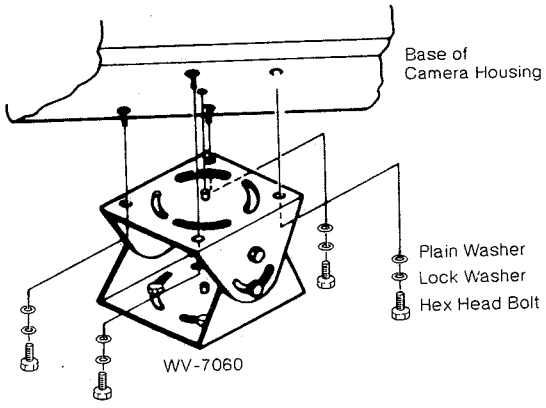
1 : Camera 24V AC
2 : Fan Heater (Housing)
3 : Defroster
4 : Wiper
5 : AC Common
6 : AC Common
7 : DC Common
8 : Iris
9 : Focus
10 : Zoom
11 : Earth

INSTALLATION OF CAMERA HOUSING

PRECAUTION:
The following installation should be made by qualified service personnel or system installers.

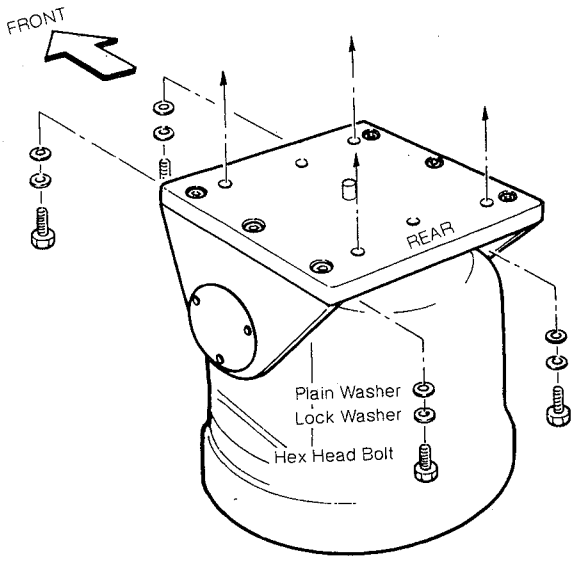
A. **When mounting the Camera Housing to the Optional Bracket WV-7060.**

- Four M8 x 20 mm hex head bolts lockwashers and plain washers are provided with the bracket.
  Use these to mount the camera housing as shown below.



B. **When mounting the Camera Housing to the Optional Pan/Tilt Head WV-7260DE.**

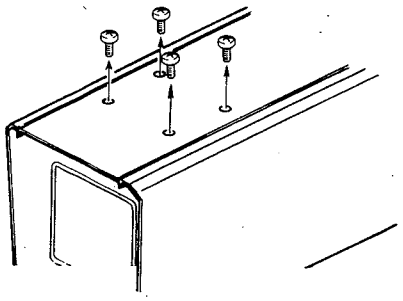
- Four M8 x 20 mm hex head bolts, lock-washers and plain washers are provided with the pan/tilt head. Use these to mount the camera housing as shown below.



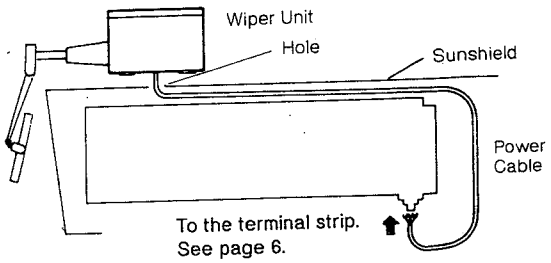
- Be sure to align the camera direction and front direction of pan/tilt head by referring to "REAR" mark on the head.

C. **When the optional Wiper Unit WV-Z50 is used, mount it as follows.**

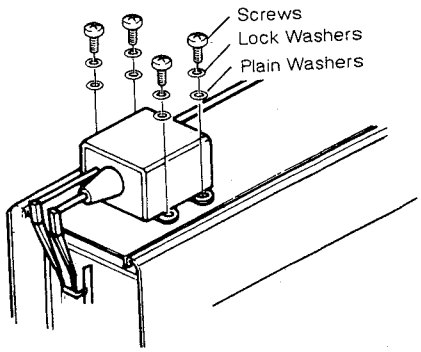
1. Remove the four sunshield screws and discard them.



2. Pass the power cable through the hole for wiring wiper unit and pass it under the sunshield, to the back and through the wiring hole.



3. Attach the wiper with four screws, lock washers and plain washers (provided with the wiper unit).



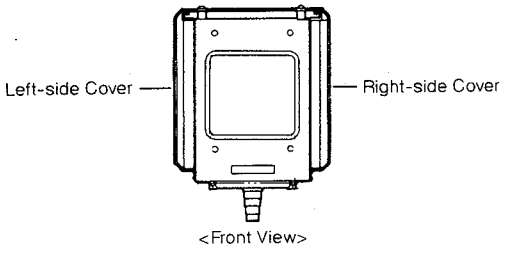
4. Complete the wiring. See CONNECTIONS OF CAMERA HOUSING on page 7.

PREPARATION OF WIRING

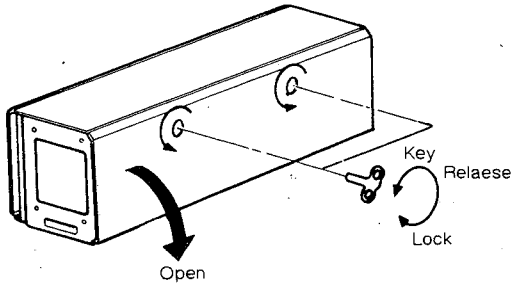
PRECAUTION :

The following preparations of wiring should be made by qualified service personnel or system installers.

1. First complete the outside wiring and connections. Then complete the inner wiring and connections.
2. It is possible to mount the camera from the right-side or left-side. However, the camera mounting plate is preset at the factory for mounting the camera from the right-side.

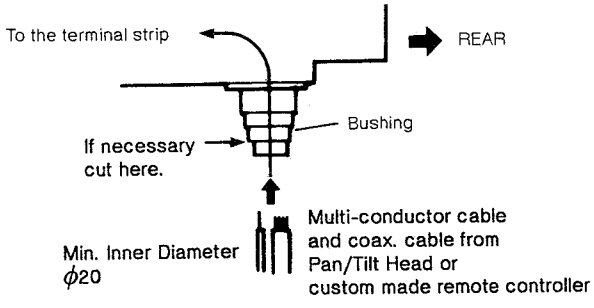


3. Open the right-side cover with the key (provided). If it is necessary to mount the camera from the left-side, open the left-side cover.



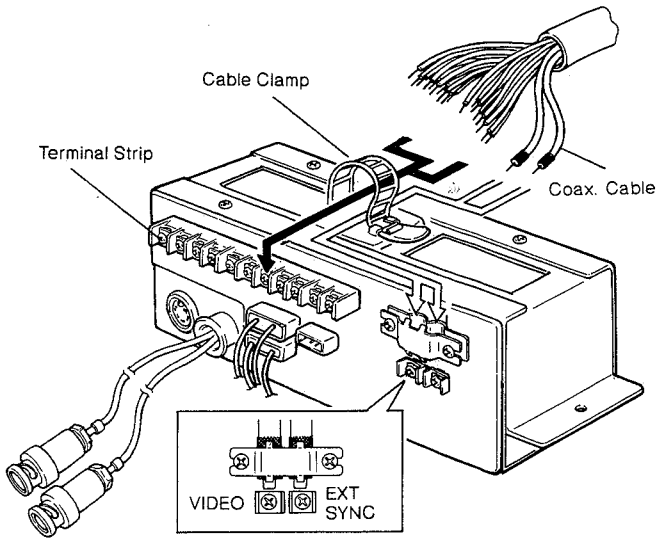
Turn the key counterclockwise until it stops.

4. Choose the wiring hole size for the rubber bushing, cut the bushing at the appropriate size. The minimum hole size is 20 mm.



Pass the cables through the wiring hole.

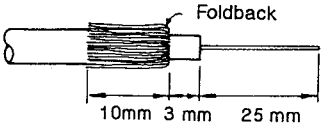
5. Clamp the cables as below.
Pass the cables through the wiring hole.



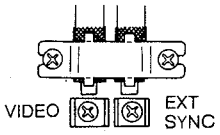
CONNECTIONS OF CAMERA HOUSING

PRECAUTIONS :
- The following connections should be made by qualified service personnel or system installers.
- Use the following type cable.
  Impedance : 75Ω
  Diameter : ϕ8 mm or less

A. Video Terminal Board
- Prepare coaxial cable as shown as below.
  The coaxial cable from the WV-7260DE is completed.



1. Hold the shield wire.
2. Connect the inner conductor.

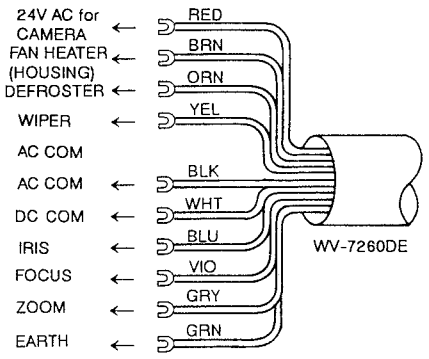


B. Terminal Strip

Cautions :
- Keep the power switch in the OFF position during installation.
- Do not cause a short between terminals. This will cause a fuse to blow.

1. When the camera housing is mounted on the Pan/Tilt Head WV-7260DE :
   Connect the multi-conductor cable from the pan/tilt head to the terminal strip in the camera housing.

Terminal No. WV-7160DE
1
2
3
4
5
6
7
8
9
10
11



Cautions :
Be sure to isolate the unused wire terminals. If the unused terminals are not isoluted, it will cause a fuse to blow.

- When the camera housing is mounted on the Bracket WV- 7060 :
  Connect the multi-conductor cable from a controller which has a 24V$^{+10}_{-20}$% (19.2 - 26.4V) AC power supply to the terminal strip in the camera housing.

Terminal No. WV-7160DE	Description	Power Source
1	24V AC for CAMERA	24V AC
2	Fan Heater	
3	DEFROSTER	
(4)	WIPER	
(5)	AC COMMON	24V AC COM
6	AC COMMON	
7	DC COMMON	±6V DC COM
8	IRIS	±6V DC
9	FOCUS	
10	ZOOM	
(11)	EARTH	

The ( ) position is used as the terminal for wiper connector.

Select a multi-conductor cable which meets FR-1 rating with 10 or 11 conductors for WV-7160DE. The wire gauge can be determined by the chart below. If 10 conductors are available for the WV-7160DE, the extra wire serves as a second AC common line.
- Recommended wire gauge size for 24V AC lines when using a camera whose power consumption is 11W, heater is 50W and wiper is 20W and defroster is 15W.

Model				WV-7160DE	
Copper wire gauge		Impedance		Conductors	
AWG No.	Section area	km/Ω at 20°C		10	11
24	(0.22 mm^2)	77.9	m	4	6
22	(0.33 mm^2)	50.4	m	6	10
20	(0.52 mm^2)	32.3	m	10	15
18	(0.83 mm^2)	19.9	m	15	25

- When used with WV-7260DE
  Select a multi-conductor cable which meets FR-1 rating with 14 or 15 conductors for WV-7160DE.
  The wire gauge can be determined by the chart below.
  If 15 conductors are available for the WV-7160DE, the extra wire serves as a second AC common line.

Model				WV-7160DE	
Copper wire gauge		Impedance		Conductors	
AWG No.	Section area	km/Ω at 20°C		14	15
24	(0.22 mm^2)	77.9	m	3	5
22	(0.33 mm^2)	50.4	m	5	8
20	(0.52 mm^2)	32.3	m	8	10
18	(0.83 mm^2)	19.9	m	10	20

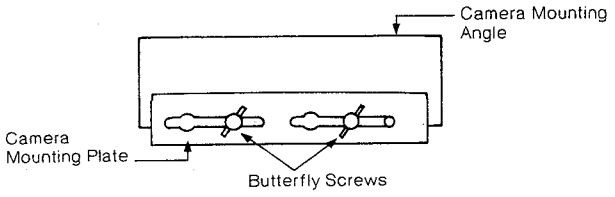
The above conductors length shown are approximate.

INSTALLATION OF CAMERA

CAUTION :

The following installation should be made by qualified service personnel or system installers.

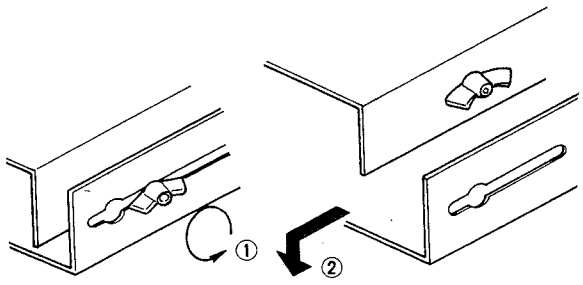
1. Remove the camera mounting plate from the camera mounting angle.



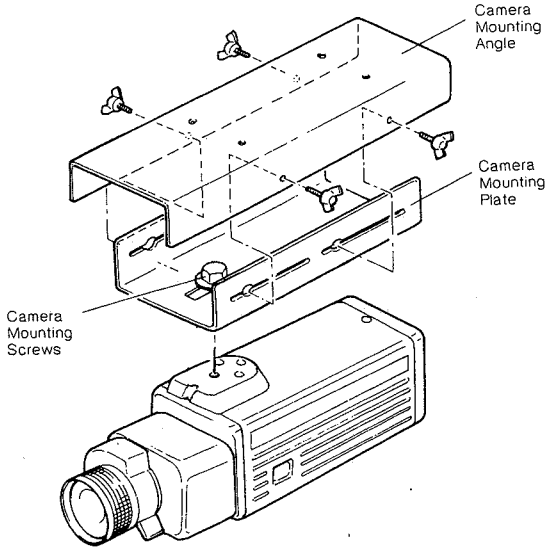
(1) Loosen the two butterfly screws and set them along the slotted guide.

(2) Slide the camera mounting plate and take off.

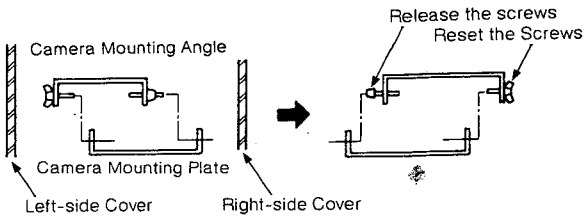
2. Mount the camera to the camera mounting plate with camera mounting screws with insulation rubber (provided).



<For WV-CD24/BL204/CL304/CL314/BL604/CL704>



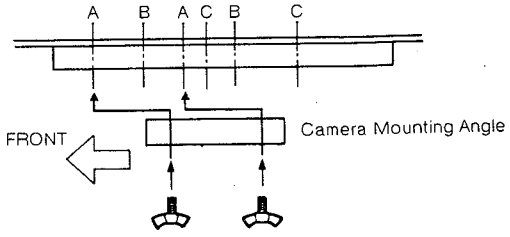
3. If it is necessary to mount the camera from the left-side, change the butterfly screws on the camera mounting angle as shown below.



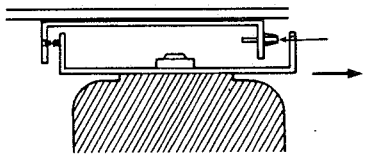
4. If the lens dimensions require it, remove the camera mounting angle and reposition by selecting the appropriate mounting holes. See chart below.

Lens Length	Holes
150 - 200 mm	C
100 - 150 mm	B
Shorter than 100 mm	A

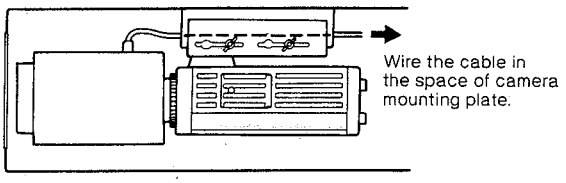
<Preset on A position at factory>



5. Attach the camera mounting plate with camera to the camera mounting angle.

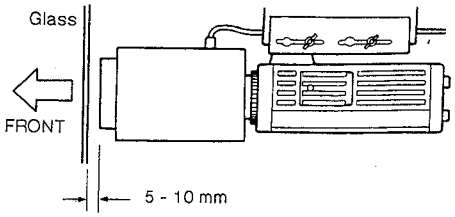


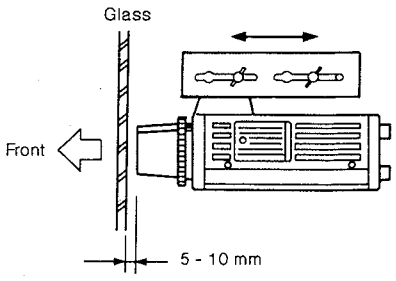
- Wire the zoom cable as shown below, to keep the wires away from the heater.



If the connector of the zoom cable does not match the zoom control connector, change the connector to the provided one.

6. Adjust the camera position as shown. Then tighten the two butterfly screws.





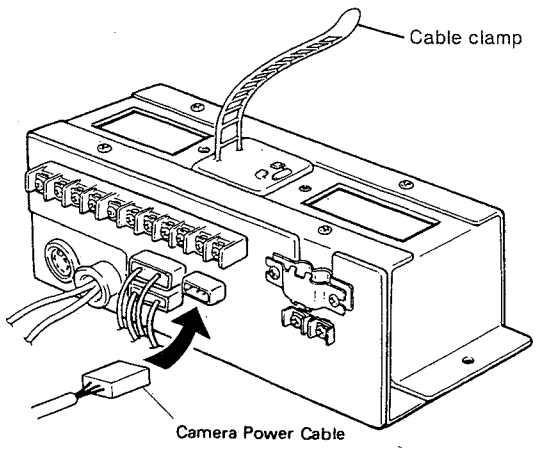
CONNECTION OF CAMERA

CAUTION :

The following connection should be made by qualified service personnel or system installers.

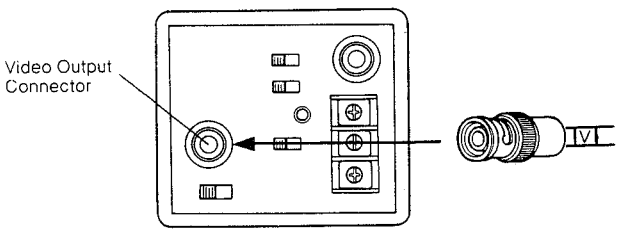
A. Camera Power Cable

1. Connect the camera power cable to the Camera Power Supply Connector (17).
2. Connect the camera power cable (provided) to the camera power connector on the camera.

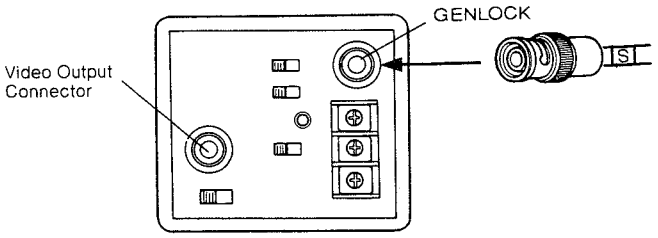


B. Connect the Video Output and External Sync. Input Cables with TV Camera

1. Connect the Video Output Cable (V) to the video output connector of the camera.

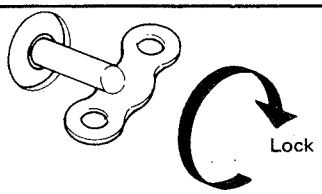


2. Connect the Gen-lock Sync. Input Cable (S) to the Gen-lock Input connector of the camera.
   If the Gen-lock input connector is not in the camera clamp this connector to the cable clamp.



COMPLETION OF WIRING

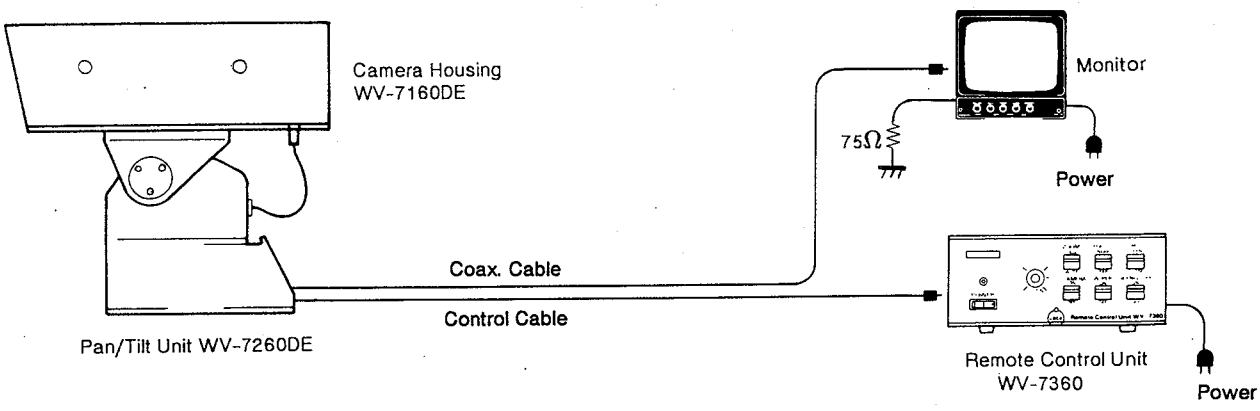
- Turn on the power switch of the camera.
- Rotate the key (supplied) clockwise until it stops.



CAUTION :

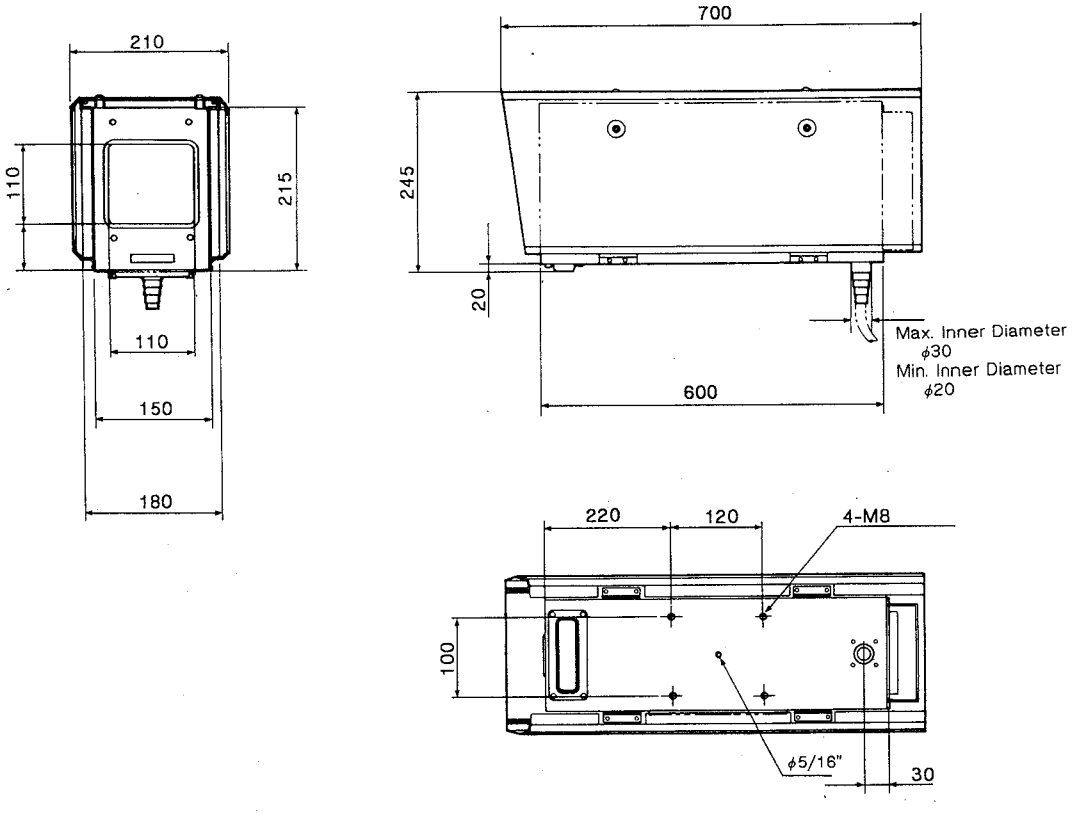
When the camera LED reflectes on the glass and it's light comes in the screen, put the Power Indicator Masking Label (accessory) on the LED.

TYPICAL SYSTEM CONNECTIONS

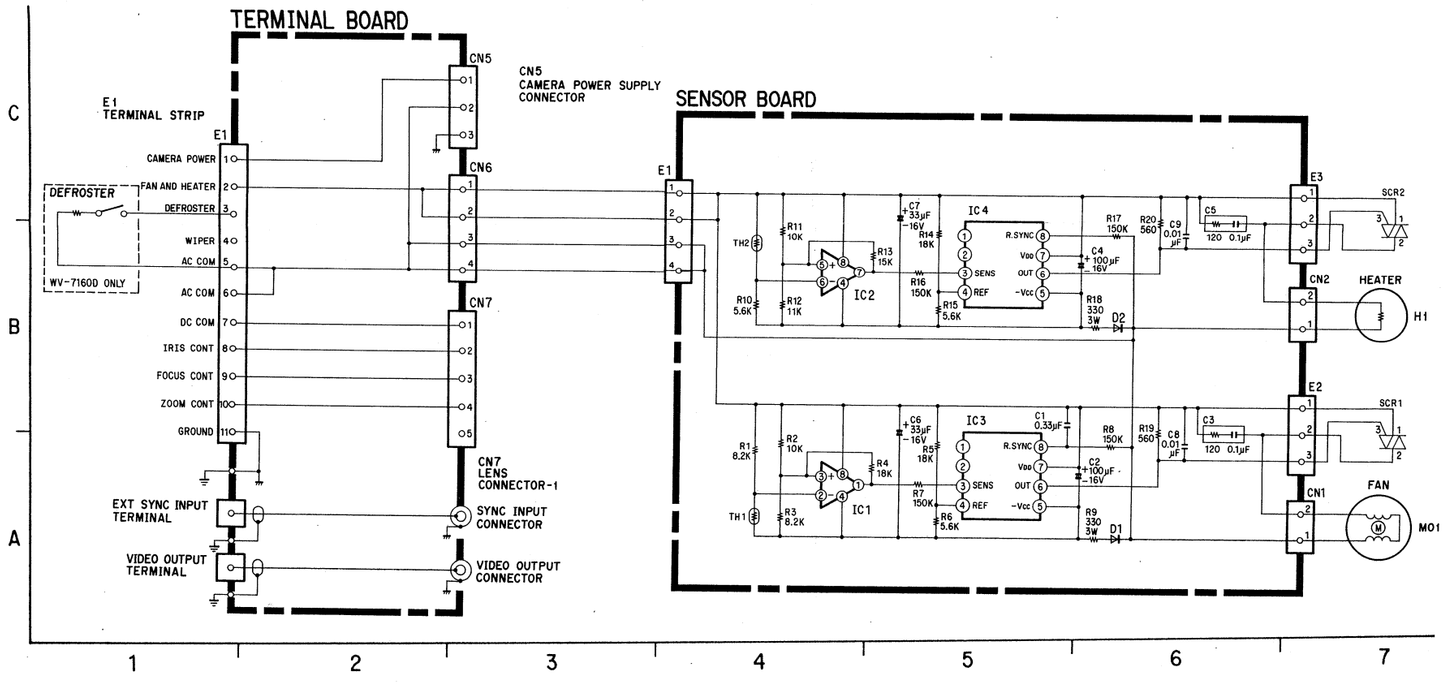


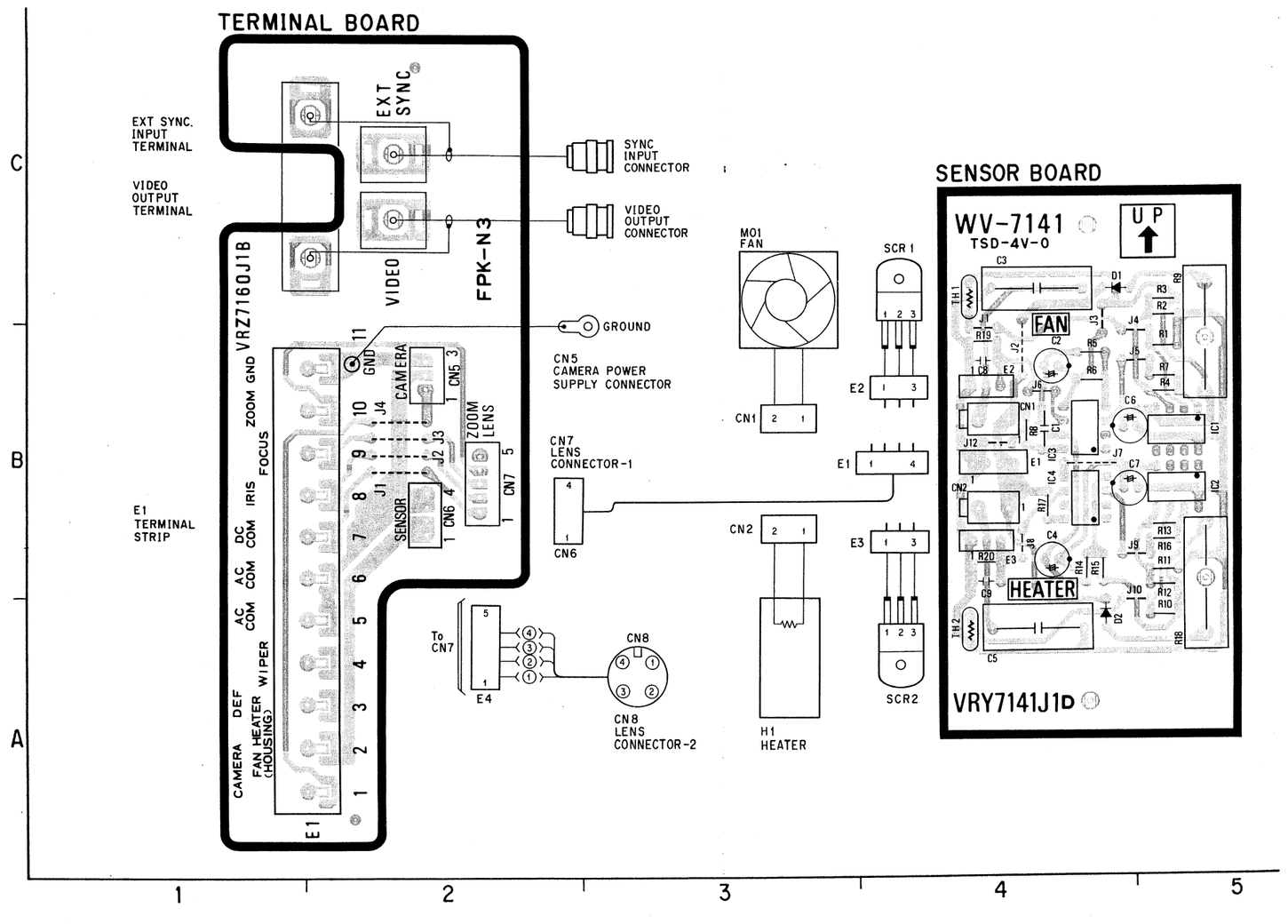
APPEARANCE

Unit: mm



SCHEMATIC DIAGRAM



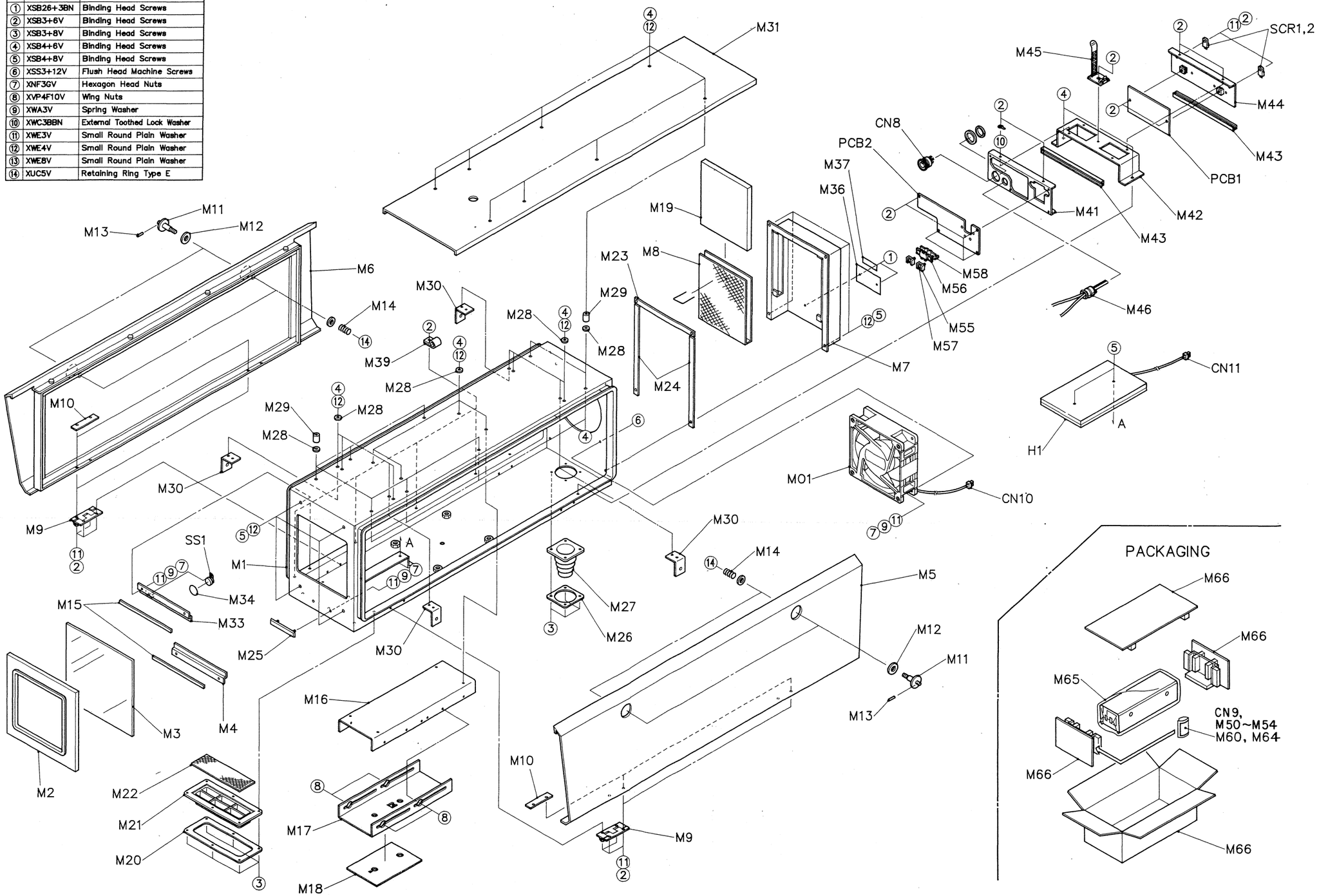


CONDUCTOR VIEW

EXPLODED VIEW

◯ Numbers show screws

No.	Screws	Description
①	XSB26+3BN	Binding Head Screws
②	XSB3+6V	Binding Head Screws
③	XSB3+8V	Binding Head Screws
④	XSB4+6V	Binding Head Screws
⑤	XSB4+8V	Binding Head Screws
⑥	XSS3+12V	Flush Head Machine Screws
⑦	XNF3GV	Hexagon Head Nuts
⑧	XVP4F10V	Wing Nuts
⑨	XWA3V	Spring Washer
⑩	XWC3BBN	External Toothed Lock Washer
⑪	XWE3V	Small Round Plain Washer
⑫	XWE4V	Small Round Plain Washer
⑬	XWE8V	Small Round Plain Washer
⑭	XUC5V	Retaining Ring Type E



REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "⚠" mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.

REF.NO.	PART NO.	DESCRIPTION
OUTDOOR CAMERA HOUSING WV-7160D		
MISCELLANEOUS		
SCR1,2	BCR5PM8L	Thyristor
MO1	YWCT3B-AC24V	AC Motor
H1	YW7150HEATER	Heater
SS1	YWTH-51WF	Transjucer
E5-8	YW5556TL	Terminal
E14,15	YWV1.25N3A	Terminal
CN8	YWMAB4100	Socket
CN10	YW555702R	2-pin Connector
CN11	YW555702RBL	2-pin Connector
M1	YWV5KB0785A1	Main Case
M2	YWV7150WB01	Cushion
M3	YW7160DEF	Front Glass
M4	YWV7150AM02A	Mounting Angle for Glass
M5	YWV9AA0608AN	Right Side Cover Assy
M6	YWV9AA0609AN	Left Side Cover Assy
M7	YWV5EB0645A3	Filter Cover
M8	YWV7150KM08	Case
M9	YWV7150EM01	Hinge
M10	YWV1FA0043A4	Nut Plate
M11	YWV1EA0130A4	Special Screw
M12	YWV1KA0088A4	Washer
M13	YWV1HA0041A4	Pin
M14	YWV4JA0267A4	Spring
M15	YWV7150LB06	Cushion
M16	YWV2SA1531A3	Mounting Angle
M17	YWV2SA1529A3	Mounting Angle
M18	YWV2PA0360A4	Insulator
M19	YWV7150LR02	Dust Proof Parts
M20	YWV7150LM03	Hold Plate
M21	YWV7150WB03A	Cushion
M22	YWV7150LM02	Net
M23	YWV7CA0027A4	Sealing Packing
M24	YWV7CA0028A4	Sealing Packing
M25	YWS-LM010A	Badge
M26	YWV7150LM04	Hold Plate
M27	YWV7150WB02A	Cushion
M28	YWV7150LB03	Washer
M29	YWV7150BM01	Support
M30	YWV2SA1320A4	Mounting Angle

REF.NO.	PART NO.	DESCRIPTION
M31	YWV2HA0775A2	Upper Cover
M33	YWV2SA1532A4	Mounting Angle
M34	YWV2PA0366A4	Insulator Sheet
M35	YWV1EA0170A4	Special Screw
M36	YWV7QA2157A4	Main Label
M37	YFV7MB0099A4	Cauttion Label
M39	YWHP2N	Cord Clamp C
M41	YWV2KA0553A4	Chassis for Terminal
M42	YWV5KA0956B4	Terminal Case
M43	YWV7150FR01	Protector
M44	YWV2SA1530B4	Mounting Angle
M45	YWUL-18	Cord Clamp A
M46	YWSR4N-5	Cord Clamp B

SENSOR BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB1 (NLA)	YWVKY7150P1A	Printed Circuit Board Assy	
IC1,2	AN1393	IC	
IC3,4	UAA1016B	IC	
D1,2	YWERA1501	Diode	
TH1	ERTD2ZHJ103S	Thermistor	
TH2	ERTD2ZGJ202S	Thermistor	
R1	ER0S2CHF8201	Metal	8.2K ohms
R2	ER0S2CHF1002	Metal	10K ohms
R3	ER0S2CHF8201	Metal	8.2K ohms
R4,5	ER0S2CHF1802	Metal	18K ohms
R6	ER0S2CHF5601	Metal	5.6K ohms
R7,8	ERDS2TJ154	Carbon	150K ohms 1/4W
R9	ERG3SJ331	Metal	330 ohms 3W
R10	ER0S2CHF5601	Metal	5.6K ohms
R11	ER0S2CHF1002	Metal	10K ohms
R12	ER0S2CHF1102	Metal	11K ohms
R13	ER0S2CHF1502	Metal	15K ohms
R14	ER0S2CHF1802	Metal	18K ohms
R15	ER0S2CHF5601	Metal	5.6K ohms
R16,17	ERDS2TJ154	Carbon	150K ohms 1/4W
R18	ERG3SJ331	Metal	330 ohms 3W
R19,20	ERDS2TJ561	Carbon	560 ohms 1/4W
C1	ECQM1H334KZ	Plastic	0.33 µF
C2	ECEA1CGE101	Electrolytic	100 µF 16V
C3	ECQJ0186N	Plastic	18 µF
R18	ERG3SJ331	Metal	330 ohms 3W
R19,20	ERDS2TJ561	Carbon	560 ohms 1/4W
C1	ECQM1H334KZ	Plastic	0.33 µF
C2	ECEA1CGE101	Electrolytic	100 µF 16V
C3	ECQJ0186N	Plastic	18 µF
C4	ECEA1CGE101	Electrolytic	100 µF 16V
C5	ECQJ0186N	Plastic	18 µF
C6,7	ECEA1CGE330	Electrolytic	33 µF 16V
C8,9	ECQB1H103JZ	Plastic	0.01 µF 50V
CN1	YW556602A	2-pin Connector	
CN2	YW556602ABL	2-pin Connector	

TERMINAL BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2	YWVRZ7160J1A	Printed Board
CN5	YWB3BXHA	3-pin Connector
CN6	YFB4B-XH-A	4-pin Connector
CN7	YWB5B-XHA	5-pin Connector
E1	YWT6497	Terminal
M55	YVL467GTM049	Electrode
M56	YWV2CA0240A4	Hold Plate
M57	YWV1EA0109A4	Special Screw
M58	YWV1FA0032A4	Nut

ACCESSORY PARTS/PACKAGING PARTS

CN9	YWMAS4100	Socket
M50	YWV7150EM03	Key
M51	YWV835-EM01	Special Screw
M52	YWV2PA0351A4	Insulator
M53	YWV7SA0905A4	LED Label
M54	YWT10X10C03	Polyethylene Bag
M60	YWV8QA2059AN	Operating Instructions
M63	XZB26X40C05	Polyethylene Bag
M64	YWT15X20C03	Polyethylene Bag
M65	YWT50X115C10	Polyethylene Bag
M66	YWV9CA1420AN	Packaging Ass'y